Dividing the determinant by x^2 by dividing the sixth column and sixth rank by x; also taking the lower rank to the top by five transpositions and five changes of sign; also the sixth column to the first by five additions, transpositions and changes of sign, and we get

$$\begin{vmatrix} \frac{1}{x^2} & 1 & 1 & 1 & 1 & 1 \\ 1 & 1 & a & b & c & d \\ 1 & a & 1 & e & g & l \\ 1 & b & e & 1 & h & k \\ 1 & c & g & h & 1 & n \\ 1 & d & l & k & n & 1 \end{vmatrix} = 0. \quad \text{Hence } \frac{1}{x^2} \begin{vmatrix} 1 & a & b & c & d \\ a & 1 & e & g & l \\ b & e & 1 & h & k \\ c & g & h & 1 & n \\ d & l & k & n & 1 \end{vmatrix} =$$

$$-\begin{vmatrix} a & b & c & d & 1 \\ 1 & e & g & l & 1 \\ e & 1 & h & k & 1 \\ g & h & 1 & n & 1 \\ l & k & n & 1 & 1 \end{vmatrix} - \begin{vmatrix} b & c & d & 1 & 1 \\ e & g & l & 1 & a \\ 1 & h & k & 1 & b \\ h & 1 & n & 1 & c \\ k & n & 1 & 1 & d \end{vmatrix} - \begin{vmatrix} c & d & 1 & 1 & a \\ g & l & 1 & a & 1 \\ h & k & 1 & b & e \\ 1 & n & 1 & c & g \\ n & 1 & 1 & d & l \end{vmatrix} - \begin{vmatrix} d & 1 & 1 & a & b \\ l & 1 & a & 1 & e \\ k & 1 & b & e & 1 \\ n & 1 & c & g & h \\ 1 & 1 & d & l & k \end{vmatrix} - \begin{vmatrix} 1 & 1 & a & b & c \\ 1 & a & 1 & e & g \\ 1 & b & e & 1 & h \\ 1 & c & g & h & 1 \\ 1 & d & l & k & n \end{vmatrix}$$

From this equation $\frac{1}{x^2}$ is at once found, and hence x and $\cos^{-1}x$.

Having the $\cos^{-1}x$, to construct the sixth sphere. With the centers of the five spheres as vertices and indefinite lines making $\cos^{-1}x$ with the radii of the respective spheres drawn toward the common origin which we have been using, describe circular cones, which will intersect in a common point which is the center of the sixth sphere.

All spheres having this point as center will cut the five spheres at equal angles.

NOTE ON ATTRACTION, BY R. J. ADCOCK, MONMOUTH, ILL.—If every particle of matter attracts from all directions with an equal constant force, then the attraction between masses or molecules must vary *directly* as their sum and *inversely* as the square of their distance. That no other law is possible follows from the following considerations:—

If every particle attracts with the same constant force, then, that the attraction is as the sum of the masses follows from the axiom that the whole is equal to all its parts. And if the attraction of each particle is a constant force exerted in *all* directions, then, obviously, because the *areas* over which the force is distributed at different distances vary as the squares of the distances, the energy exerted upon a point, or upon a particle of matter at any distance, is inversely as the square of the distance.

Hence, from the known laws of attraction, we have this ultimate proposition:— Assuming the ultimate particles of matter to be infinitely small, every particle attracts, or *draws*, from all directions, with an equal and constant force without regard to the distance of its point of application.